

CORNET® ED-15C Electromog meter user's manual

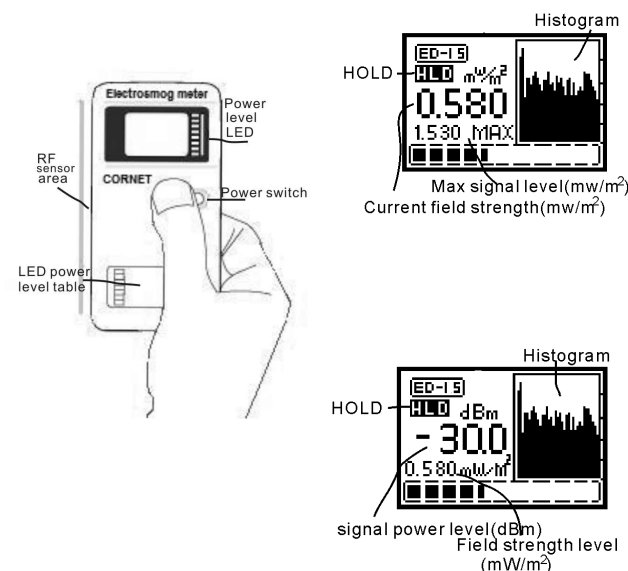
CORNET Microsystems ED-15 Electromog meter is designed for quick measurement of High frequency (RF) Electromagnet wave field strength and power density level for living environments. It is excellent device for individual or company with Electromagnetic wave safety concerns. It has bandwidth of 100MHz to 3GHz useful detection range, high sensitivity of -55dBm to 0dBm and very fast response time.

Applications:

- High frequency (RF) Electromagnetic wave field strength measurement
- Mobile phone base station antenna radiation power density measurement
- Wireless communication applications (AM/FM, TDMA, GSM, DECT, CDMA)
- RF power measurement for transmitters
- Wireless LAN (Wi-Fi), Bluetooth, Ultra-wide-band detection, installation
- Spy camera, wireless bug finder
- Cellular/Cordless phone radiation safety level
- Microwave oven leakage detection
- Personal living environment EMF safety

Usage guide:

- (1) Put the 9V battery in the ED15, Handle the ED15 with right hand in vertical direction, and push the power switch button.
- (2) The RF sensor is located in the left hand side of the ED15; please do not cover the RF sensor area with hand or other objects.
- (3) Measured RF field strength/power density is shown on the digital LCD display (with dBm and $\mu\text{W}/\text{m}^2$, mW/m^2). 1st Push button can be used to select one of the two display mode.
- (4) 8 LED lights. With Red, Yellow, and Green color on the right hand side of LCD window is used for quick RF signal level indications. 3 Red LEDs are used to indicate the 3 safety range. The power level of each LED can be found in the table on the ED15 front panel.
- (5) Histogram of previous 30 signal level readings are recorded and shown as moving graph on the LCD display
- (6) Bar segment display can be used for relative signal strength indication.
- (7) Most high frequency RF antenna such as Mobile phone base station is vertical polarized (in vertical direction), therefore the ED15 is normally used in vertical direction. Please rotate the ED15 to find the maximum power reading direction to take care of RF wave reflections. The ED15 can also be used to find the location of signal source.
- (8) Most of modern communication devices (Mobile phone, Wireless LAN, Wi-Fi, etc..) use digital communication technology with burst RF signals. When measuring this type of RF signals, several LED lights will blinking at the same time. This is normal and can be used as an indication of burst type of RF signals. For continues waves (AM/FM) signals, the LED light will stable. ED15 measures peak power density of signal with very fast response time. It is more accurate than the needle style of readout which only shown the average value of signal power most of the time.
- (9) ED15 is a broadband High frequency (RF) type of Electrical field measuring device. It is used for applications such as Mobile phone base station antenna radiation, Microwave oven, Cellular/cordless phone, Radio transmitters, and WiFi wireless LAN installation aid. It is not for low frequency magnetic field measurement (AC power Line, transformer, high voltage power transmission line, motor ...) which should be measured with Gauss-meters devices. Such as CORNET model ED25G RF/LF dual mode meters.
- (10) To get into the Hold mode, toggle the 2nd button under the power switch, the "Hold" sign will show on the LCD display when in Hold mode.
- (11) To turn on/off the LCD back light, use 2nd push button to get into the "HOLD" mode first, then use the 1st push button to toggle the LCD back light on and off. Remember to turn off the LCD backlight when it is not required to save the battery power consumptions.



Field strength/power density readout:

ED15 use 8 high brightness LED to indicate the measured power density with 3 safety indications.

LED color	Power level	Power density	Indication	Action
RED3	-5 dBm up	0.18 W/m^2	Italy safety standard (0.1 W/m^2)	Caution!
RED2	-10 dBm	0.058 W/m^2	Swiss safety standard (0.04 W/m^2)	Caution!
RED1	-15 dBm	0.018 W/m^2	Russian safety standard(0.02 W/m^2)	Caution!
YELLOW3	-20 dBm	5.8 mW/m^2		safe
YELLOW2	-25 dBm	1.8 mW/m^2		safe
YELLOW1	-30 dBm	0.58 mW/m^2		safe
GREEN3	-35 dBm	0.18 mW/m^2	WiFi Wireless LAN typically in this range	safe
GREEN2	-40 dB down	0.06 mW/m^2	Some signal source around	safe

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NOTE:

* Electromagnetic wave field strength/power density decays very fast with distance (distance square), keep a good distance from the high frequency RF signal source can reduce the high frequency radiation effect. Alumina foil or window sun reflector film (silver color) can be used as a effective and low cost shielding material for most of RF radiations.

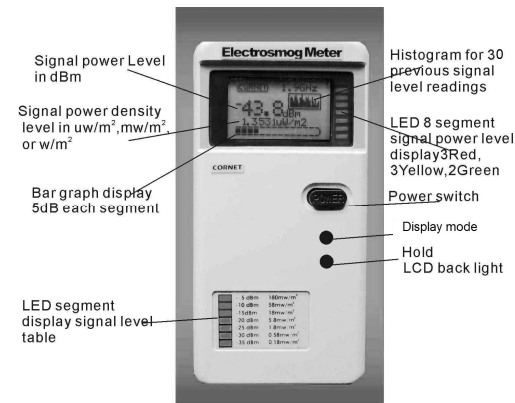
* ED15 is designed for quick living environment RF radiation evaluation and is for reference use only. Official RF safety radiation measurement procedure is complicate and should be handled by trained technical person with lab instruments. Safety range standard listed here is for reference only. ED15 is not a medical instrument, Please do not use it in medical, legal or other related applications.

The European Community provided general guidelines in its Council Recommendation of July 1999.¹ ICNIRP published similar guidelines in April 1998.² Table I gives a sampling of the international and national field-strength limit values for the general public and continuous exposure (for Reference only !)

1850Mhz		950Mhz	
International	Council Recommendation 1999/519/EC	42 V/m (4.75W/m ²)	59 V/m (9.25W/m ²)
International	ICNIRP Guidelines, April 1998	42 V/m (4.75W/m ²)	59 V/m (9.25W/m ²)
Austria	ÖNORM S1120	49 V/m (6.33W/m ²)	61 V/m (10W/m ²)
Belgium	Belgisch Staatsblad F.2001-1365	21 V/m (1.18W/m ²)	30 V/m (2.31W/m ²)
Germany	26. Deutsche Verordnung	42 V/m (4.75W/m ²)	59 V/m (9.25W/m ²)
Italy	Decreto n. 381, 1998	6 V/m (0.1W/m ²) 20 V/m (1W/m ²)	6 V/m (0.1W/m ²) 20 V/m (1W/m ²)
The Netherlands	Health Council	51 V/m (6.92W/m ²)	83 V/m (18W/m ²)
Switzerland	Verordnung 1999	4 V/m (0.04W/m ²)	6 V/m (0.1W/m ²)
United States	IEEE C95.1	49 V/m (6.33W/m ²)	68 V/m (12W/m ²)
China	Draft: National Quality Technology Monitoring Bureau	49 V/m (6.33W/m ²)	61 V/m (10W/m ²)
Japan	Radio-Radiation Protection Guidelines, 1990	49 V/m (6.33W/m ²)	61 V/m (10W/m ²)

Specification:

Sensor type: Electric field sensor
Frequency range: 100MHz to 3GHz useful detection range
Sensitivity: -55dBm to 0dBm (25mv/m to 14.8v/m)
Dynamic range: 60 dB
Peak power measurement: 1.5uw/m² to 0.58w/m²
Display type: digital LCD display, LED color segment display
Unit of measurements: dBm, uw/m², mw/m², w/m²
LCD back light: 15 seconds auto-off
Display of data: LCD 3 and 5 digit, 8 LED color segment, Histogram of 30 reading, LCD Bar segment
Safety standard indication: 3 safety range indication by 3 Red LED
Battery used: 9V alkaline battery, (not included)
Battery life: >20 hours



WARRANTY STATEMENT:

Cornet Microsystems guarantees that every instant CORNET ED15 product is free from physical defects in material and workmanship under normal use for one (1) year from the date of purchase from Cornet Microsystems or an authorized Cornet Microsystems agent. This warranty applies only to the original purchaser and is not transferable. Proof of purchase will be required before any warranty consideration by Cornet Microsystems occurs. This warranty does not cover any damage caused by negligence, non-authorized modifications, or parts installed without prior written permission from Cornet Microsystems. This warranty does not apply if the product has been damaged either by accident, misuse, or misapplication, or as a result of service to the product by anyone other than Cornet Microsystems.

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CORNET ED-15 Revision 3.0L and up has additional improvements and new user's interface. The changes are in the followings:

Changes to Usage guide:

- (1) **New LCD Display modes:**
There are two LCD display mode in the new Rev.3.0L meter. The 1st push button is used to change the LCD display mode:
(a) Power meter display mode---see Fig.1, the signal level is displayed in dBm with big character and the mw/m² in small character, the Histogram display is larger.
(b) Field strength meter display mode---see Fig.2, the signal level is displayed in mW/m² with big character and the Max.signal level is displayed in the small character
- (2) **Changes to the function of two push-button**----- the 1st button is used to change the LCD display mode. The 2nd push button is used to get into and exit the "HOLD" mode of the ED85EX LCD display.
- (3) **Changes to the LCD back light control**----- to turn on/off the LCD back light, use 2nd push button to get into the "HOLD" mode first, then use the 1st push button to toggle the LCD back light on and off. Get out of "HOLD" mode by pushing 2nd button after the LCD back light setup.
- (4) **Additional Max signal level display** ----- in Field strength display mode, the Maximum signal level (since meter Power on) is displayed below the current mW/m² display line, the Max signal level is excellent for recording the Max. Signal level while measuring around with the meter. To reset the Max. Signal level; just get into the "HOLD" mode first by 2nd push button, the Max signal level will be cleared when you exit the "HOLD" mode.
- (5) **Improved Histogram display**, the histogram display has been enlarged; the histogram will display the 30 previous measurement data with moving graph.

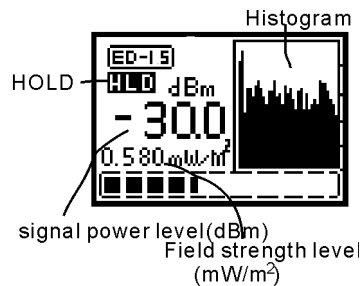


Fig.1 power mode (dBm)

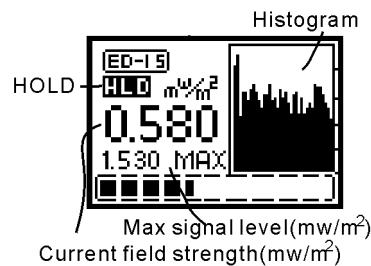


Fig.2 Field strength mode(mw/m²)

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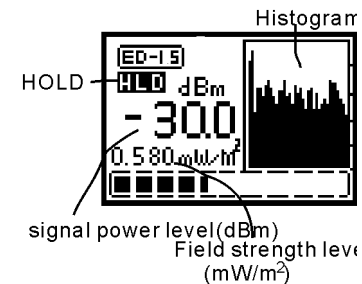


Fig.1 power mode (dBm)

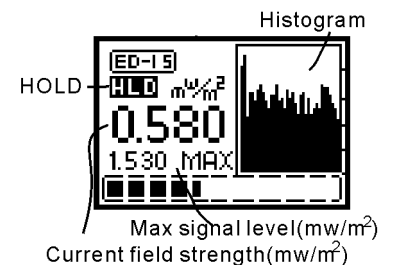


Fig.2 Field strength mode(mw/m²)